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such as Mr. Ross is capable of, I have no doubt it is also practically accurate. Mr. Ross is well able to judge of the delicacy of the measure requisite in carrying out theoretical investigations so as to render them of practical utility; and I have no doubt that in his hands such an instrument as his Spherometer would be of real practical utility.

I am, dear Sir, &c. &c.

W. A. GRAHAM, Esq.

PETER BARLOW.

No. II.

IMPROVED MICROSCOPE.

The SILVER MEDAL was presented to Mr. HUGH POWELL, 24 Clarendon Street, Somers Town, for the following Communication on his Method of Mounting the Body of a Microscope.

24 Clarendon Street, Somers Town,

SIR,

April 12, 1841.

I BEG leave to submit to the consideration of the Society of Arts a new mode of mounting the body of a microscope, and shall have much pleasure in laying the same before the Committee.

I am, Sir, &c. &c.

W. A. GRAHAM, Esq.
Secretary, &c. &c.

HUGH POWELL.

Mr. Hugh Powell's Method of Mounting the Body of a Microscope with a Quick and Slow Adjustment.

Fig. 1. A side-view of the body, with the support at its back, partly in section.

Fig. 2. Front view of the support, the body being removed.

Fig. 3. Top view, partly in section.

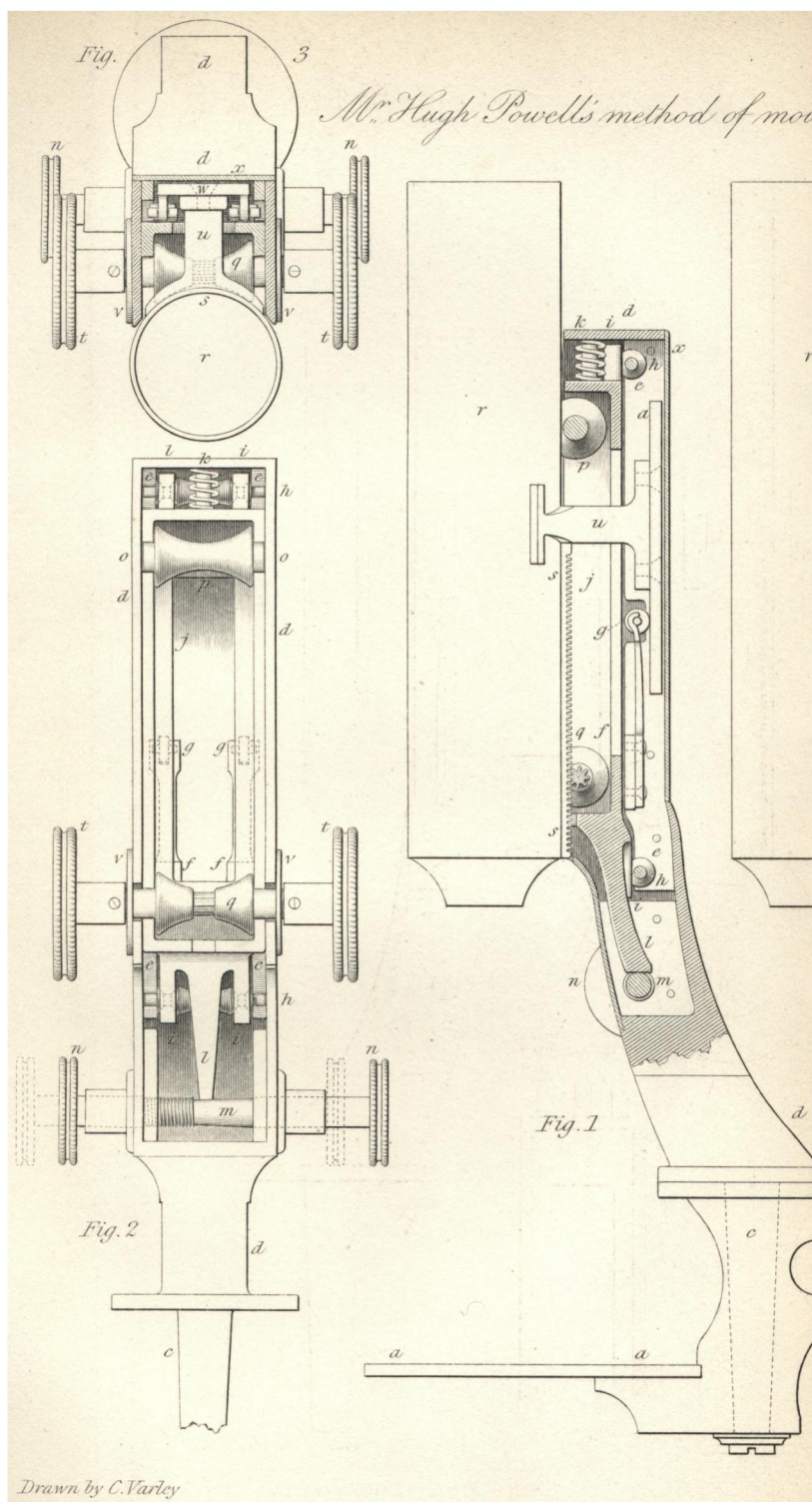
Fig. 4. Section of the support.

Fig. 1. *a a*, the plate on which the stage is fixed; *b* the joint by which it turns on the pillars (not shewn here). This is cast in one piece, having a hole to receive the conical pin *c* of the support *d d*, by which the body can be turned aside from the stage. The support *d d* is a hollow frame, cast in one with the pin *c*, as shewn in fig. 2. Within it are screwed two cheeks *ee*; one is shewn by the side of fig. 4: from each of these projects a piece *f*, on which are screwed the springs of the two rollers *g g*; the cheeks have notches at their extremities *ee* to receive the rollers *h h*. The frame *j*, figs. 5 and 6, is next put in; it has four pins *i i*, which run on the rollers *h h*. At the top of this frame is a central pin to hold a spring *k*, which urges the frame downwards, and at the bottom is a longer pin *l*, which bears on the gently conical axis *m*, as in figs. 1 and 2; this axis has a screw-thread on one side, and is cylindrical on the other, and has two milled heads *n n*. On turning this screw, the conical portion *m* will advance or recede under the pin *l*, and raise or lower it. Thus an extremely fine adjustment is obtained for the frame *j*, against which the body *r* is to be mounted, therefore the frame *j* (figs. 5 and 6) has gaps at *o o* to receive the pivots of the two rollers *p* and *q*. The body *r* is placed against these rollers, and touches

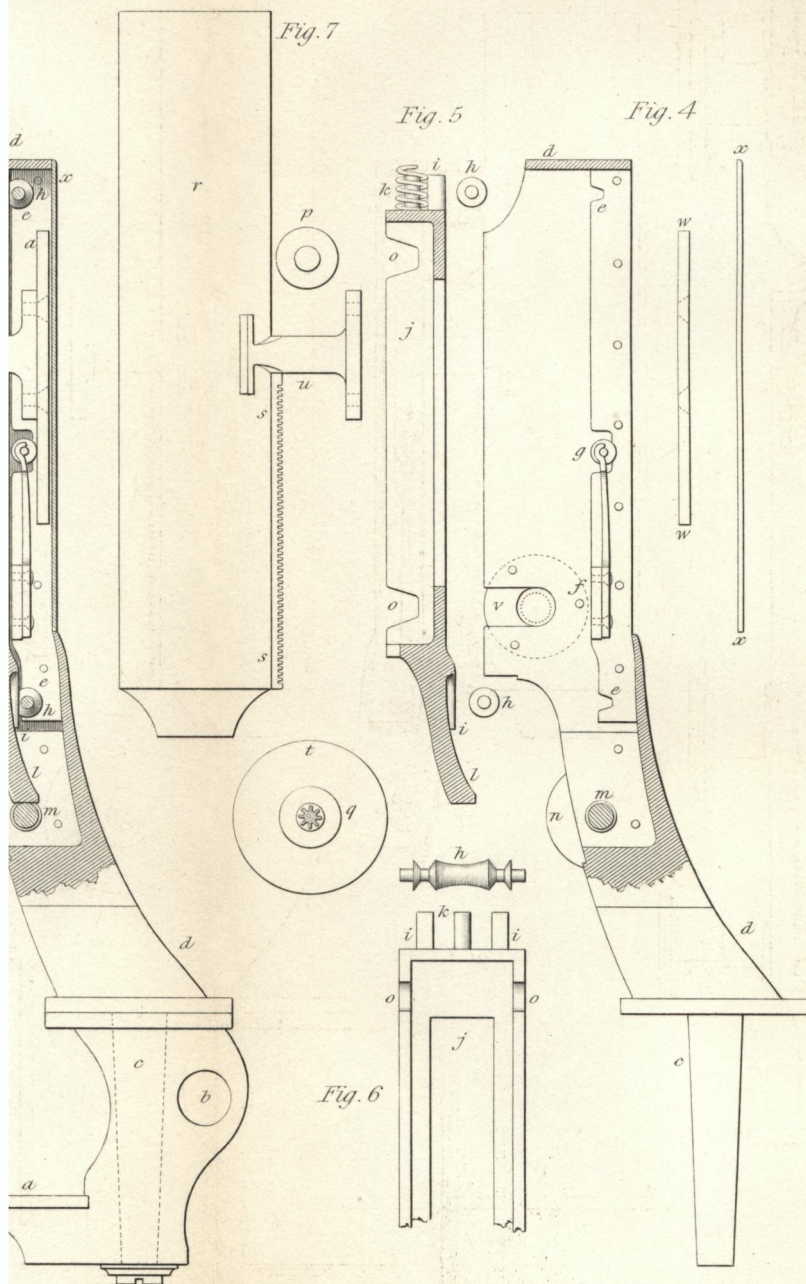
them only at their extremities; in the centre of the lower roller q a pinion is fixed, which raises or lowers the body quickly on the frame j by the rack s . This axis, like the other, has right-and-left milled heads, $t t$. In order to put this axis and roller in its place, two gaps as v , fig. 4, are made in the outer frame d : these are afterwards covered with circular collars $v v$, the holes in which, as well as the gaps, are, by the whole range of the fine adjustment, of larger diameter than the axis of the pinion-roller. In order to hold them firmly together, and yet allow of free motion, the body r (fig. 7) has a saddle-piece a screwed on it; this passes through the long opening of the frame j , to nearly a level with the rollers $g g$; it then has the plate $w w$ screwed to it, against which the rollers $g g$ are powerfully urged by their springs, the action of which keeps the whole firmly in place. The spring-rollers $g g$ being attached to the support d , so as to stand nearly mid-way between the body-rollers p and q , they will hold the body equally firm in every position. The small rollers $h h$, in the cheeks $e e$, are the support against the action of the rollers $g g$. Thus the quick motion is effected by moving the body on the frame j , and the slow motion, by moving the frame j within the outer-frame or support d .

The motion by rack and pinion is limited by the extent of the opening in the frame j , the saddle-piece a coming against either end of it; and when the fine adjustment is used, the frame j moves within a range of less than $\frac{1}{30}$ of an inch, carrying with it the pinion, rack, and body.

Any tendency of the body to run down by its own weight is prevented by the construction of the rollers; their pivots, being large, give friction, and the pinion is only one-third the size of the extremity of the rollers



method of mounting the body of a Microscope.



against which the body acts ; and as the pinion determines the motion of the body, the rollers instead of only going with it, have to slide past it. This union of a rolling with a sliding motion prevents running down, and gives a very smooth motion.

After all the parts are put together ; the plate *xx* (by fig. 4) is screwed on to shut up the work and keep it clean.

No. III.

LIFE-APPARATUS FOR SHIPWRECK.

The SILVER MEDAL was presented to Mr. H. HARISON, Newhaven, for his Apparatus for Saving Life in cases of Shipwreck ; a Model of which has been placed in the Society's Repository.

SIR,

Newhaven, Nov. 18, 1840.

I SHALL feel obliged if you will take such measures as may be necessary to submit the accompanying model of a machine (which I have tested, and of which I have one of the full size at work) to the Society of Arts for such honorary notice as it may seem to merit.

I am, &c. &c.

W. A. GRAHAM, Esq.
Secretary.

H. HARISON.

The apparatus, of which the action and arrangement are explained by the following description, was contrived by Mr. Harison for the purpose of saving the lives of persons shipwrecked under the precipitous cliffs of a coast